GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT

MEMORANDUM

DATE:

October 3, 2011

TO:

Chris Lanane, Guy Davis

FROM:

Mike Horn

SUBJECT:

Quality Assurance Audit Report

Attached is the draft version of the document, "Great Basin Unified Air Pollution Control District Quality Assurance Audit Report, Lee Vining, October 3, 2011," for your review. Please refer any comments you may have on the document to me by December 5, 2011. If no comments are received by that date, the report will be considered final.

Thank you for your cooperation in this matter.

Great Basin Unified Air Pollution Control District Quality Assurance Audit Report

SITE: LEE VINING

Report Date: October 3, 2011 Prepared by: Mike S. Horn

1.0 Introduction

As part of the Great Basin Unified Air Pollution Control District's (District) quality assurance (QA) program, periodic audits are conducted on the monitoring stations throughout the District. These checks, which are conducted by personnel other than those associated with the day-to-day operation and maintenance of the stations, provide additional assurance that the data collected are of high quality and meet the project objectives. The achievement of these objectives can be determined, in part, by establishing criteria within which monitoring equipment is to be operated and then testing that equipment regularly to verify its operation within those criteria.

In keeping with the District's QA program goals, the Partisol, PM-10 Monitoring Station at Lee Vining was audited on October 3, 2011. The audit was conducted by Mike Horn and was witnessed by Guy Davis, who is the site operator.

2.0 Parameters Audited:

Partisol PM-10

3.0 Results and Actions

The results of the audit are summarized below. Any problems found are addressed under the heading, "Action," and are given below. Sensor responses not specifically addressed below responded within the audit criteria limits. The audit data are presented in detail in Appendix A. The certifications of the audit devices are presented in Appendix B. Audit criteria based on Title 40 code of Federal Regulations Part 58, Appendix A (October 2006), the USEPA Quality Assurance Handbook for Air Pollution Measurement Systems Volumes II, 1997, and IV, 2007, and/ or on the manufactures recommendations, are presented in table A-1.

4.0 Recommendations and Comments

There are no recommendations or comments at this time.

APPENDIX A

Great Basin Unified Air Pollution Control District Partisol - Plus PM - 10 FLOW AUDIT

Date of Report:

10/3/11

Site Name: Lee Vining

Date:

10/3/11

Operator: Guy Davis

Start:

10:35hrs. PST

Project: SB270 Site Elevation:

6781 ft

Finish: Audited By:

10:50hrs. PST Mike Horn

Amb. Press.:

795.5 mm Hg

Witness:

Guy Davis

Amb. Temp.:

16.8 deg. C

Make: R&P

Model: 2025 Sequential

Audit Temp. Slope:

Audit Temp: Testo 735 Serial # 01467895/712 Intercept:

Prop. Or Ser. No.: 755/2025A210299903

1.0006

593.0

0.0209

596.8

-3.8

Audit Device

Make: BGI Incorporated

Model: DELTA CAL

Certification Date: 12/16/10

Type: PM-10

Last Cal. Date: 9/29/11

Temperature / Pressure Verification

Audit Calculated Sampler Raw Diff. Amb Temp 17.7 16.8 16.8 0.9 Filter Temp 19.0 18.5 18.5 0.5

795.5

S/N:

0525

Conversions:

Range: 2 - 20 lpm

 $mm Hg = hPa \times 0.7502$

Calibration factors:

Slope: 1.00

atm = hPa/1013in. $Hg = hPa \times 0.0295$

Int.: 0.00 Cal Date: 1/4/11

 $^{\circ}$ K = $^{\circ}$ C + 273

Amb Pressure

 $Q_a=m[dPxT_a/P_a]^{1/2}+b$

w/ T in Kelvin, P in atm.

Leak Check:

External 96 mmhg/min.

Pass

Limit <25 mmhg

Internal 23 mmhg/min.

Pass

<140 mmhg

		Site			Nominal Flow Rates		
Audit	Audit Flow Rate		Flow Rate	Diff.	Lower Limit	Upper Limit	
Point	Indicated	(VLPM)	(VLPM)	(%)	(LPM)	(LPM)	
Total Flow Rate, Run 1	16.91	16.91	16.70	-1.2	15.0	18.4	
Total Flow Rate, Run 2	<u>16.91</u>	<u>16.91</u>	<u>16.70</u>	<u>-1.2</u>	15.0	18.4	
Avg Total Flow Rate	16.91	16.91	16.70	-1.2	15.0	18.4	

Comments: None.

TABLE A-1

GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT QUALITY ASSURANCE PERFORMANCE AUDIT CRITERIA

Measureme	nt Variable	Evaluation Criteria				
Wind Speed		At ws ≤ 5 m/s, input ± 0.25 m/s; At ws > 5 m/s, input ± 5% Starting threshold: 0.5 m/s; R. M. Young 05305 Wind Monitor AQ Starting threshold: 1.0 m/s; R. M. Young 05103 Wind Monitor and NRG Max 40H				
Wind Direct	ion	input ± 5° Starting threshold: 0.5 m/s; R. M. Young 05305 Wind Monitor AQ Starting threshold: 1.0 m/s; R. M. Young 05103 Wind Monitor				
Temperatur	e	input \pm 0.5° C Gravimetry Lab \pm 1.0 deg. C input \pm 2.0° C for PM-10, PM-2.5 samplers				
Relative Hu	midity	Ambient: input \pm 5% RH, \pm 1.5°C as dew poir Gravimetry Lab: input \pm 5%				
Precipitation	ı	input ± 10%				
Barometric l	Pressure	Ambient: input ± 10 hPa TEOM: ± 10 mm mercury				
PM-10: Hi-V PM-2.5	Vol SSI, Partisol, BGI,	input \pm 10%; Design Flow \pm 10% input \pm 4%; Design Flow \pm 5%				
TEOM:	Total Flow Main Flow Bypass Flow	input \pm 10%; Design Flow \pm 10% input \pm 10%; Design Flow \pm 10% input \pm 10%; Design Flow \pm 10%				
TEOM:	Leak Check	Main Flow: < 0.15 LPM Bypass Flow: < 0.60 LPM				

Appendix B

GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT QUALITY ASSURANCE CERTIFICATIONS OF AUDIT DEVICES

AUDIT	DEVICE

- And the Control of	Serial #	Cal Date:	Slope:	Intercept:
BGI Delta CAL:	123	1/24/11	1.0	0.0
BGI Delta CAL:	525	1/4/11	1.0	0.0
Testo 735-1	01467895/712	12/16/10	1.0006	0.0209
Barigo Altimeter/Barometer:	P9	12/17/10	1.0	0.0
RM Young wind speed motor:	CUO1, HSO1	12/3/10	N/A	N/A
Psychro-Dyne Psychrometer:	RH 04	N/A	1 0	
Texas Electronics FC-525 Precipitation:	52202	N/A		
Chinook Eng. Streamline FTS	108	9/8/10	0.41	0.6

70 3	51.2 1.8 (\$1.95)	· ·	neat be		II FUIIUUUUI CU				
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6801 F 6 196	et silvert to see a special	1	T	T			1		ì
						0 01	(V)		
	Date				Site Name:		mine!		
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	Finish	10:50	PST		Project:				
960		200			Site Elevation:		ft		-
N 51 20 N	Make:		ļ		Amb. Press.:	795,5	in. Hg	 	ļ
		2000 /(2025)			Amb. Temp.:	16.8	deg. C	+	
- Pr	op. Or Ser. No.:		<u>!</u>				***************************************		
	Last Cal. Date:	PM10 PM2.5)					Carlos de la propria de la composición dela composición de la composición de la composición dela composición dela composición dela composición de la composición dela com	
- VIII ME	Last Car. Date.	7/29/11							1
7.00		Audit Device		 	Temperature	Pressure Ver	ification		
- 10 m	Make:		L	<u> </u>	Temperature	Sampler	Standard	(Raw)	
	Model:			ATED	Amb Temp		Surradia	1/4	
**** *** *** ***	S/N:	The second second second			Filter Temp			18.5	
	Range:				Amb Pressure			795.5	
Calile	bration factors:	2 - 20	ipin	'	lib. ressure	75020		11DID	
- · ·	Slope:	1.0		 	·	.7502X		 	
	Int.:	0.0						j	
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		-1/4/1							
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	Internal	91	10 101111238	PASS				r i	
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GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT

MEMORANDUM

DATE:

August 2, 2011

TO:

Chris Lanane, Guy Davis

FROM:

Mike Horn

SUBJECT:

Quality Assurance Audit Report

Attached is the draft version of the document, "Great Basin Unified Air Pollution Control District Quality Assurance Audit Report, Lee Vining, August 1, 2011," for your review. Please refer any comments you may have on the document to me by October 3, 2011. If no comments are received by that date, the report will be considered final.

Thank you for your cooperation in this matter.

Great Basin Unified Air Pollution Control District Quality Assurance Audit Report

SITE: LEE VINING

Report Date: August 2, 2011 Prepared by: Mike S. Horn

1.0 Introduction

As part of the Great Basin Unified Air Pollution Control District's (District) quality assurance (QA) program, periodic audits are conducted on the monitoring stations throughout the District. These checks, which are conducted by personnel other than those associated with the day-to-day operation and maintenance of the stations, provide additional assurance that the data collected are of high quality and meet the project objectives. The achievement of these objectives can be determined, in part, by establishing criteria within which monitoring equipment is to be operated and then testing that equipment regularly to verify its operation within those criteria.

In keeping with the District's QA program goals, the Partisol, PM-10 Monitoring Station at Lee Vining was audited on August 1, 2011. The audit was conducted by Mike Horn and was witnessed by Guy Davis, who is the site operator.

2.0 Parameters Audited:

Partisol PM-10

3.0 Results and Actions

The results of the audit are summarized below. Any problems found are addressed under the heading, "Action," and are given below. Sensor responses not specifically addressed below responded within the audit criteria limits. The audit data are presented in detail in Appendix A. The certifications of the audit devices are presented in Appendix B. Audit criteria based on Title 40 code of Federal Regulations Part 58, Appendix A (October 2006), the USEPA Quality Assurance Handbook for Air Pollution Measurement Systems Volumes II, 1997, and IV, 2007, and/ or on the manufactures recommendations, are presented in table A-1.

4.0 Recommendations and Comments

There are no recommendations or comments at this time.

Lee Vining Audit Report August 2, 2011 Page 3

APPENDIX A

Great Basin Unified Air Pollution Control District Partisol - Plus PM - 10 FLOW AUDIT

Date of Report:

8/2/11

8/1/11

Date: Start:

13:20hrs. PST

Finish:

13:40hrs. PST

Audited By: Witness:

Mike Horn

Guy Davis

Audit Device

Make: BGI Incorporated

Amb. Temp.:

Audit Temp. Slope:

Amb. Press.:

Site Elevation:

6781 ft

801.5 mm Hg

26.8 deg. C

Make: R&P

Model: 2025 Sequential

Prop. Or Ser. No.: 755/2025A210299903

Type: PM-10

Last Cal. Date: 7/27/11

Audit Temp: Testo 735 Serial # 01467895/712

Site Name: Lee Vining

Project: SB270

Operator: Guy Davis

1.0006

Intercept:

0.0209

Audit

Certification Date: 12/16/10

Temperature / Pressure Verification

Calculated Diff. <u>Sampler</u> <u>Raw</u> 27.9 26.8 26.8 1.1 Amb Temp 27.9 27.9 0.4 Filter Temp 28.3 -3.3 801.5 601.3 598.0 Amb Pressure

Model: DELTA CAL

S/N:

0525

Range:

Calibration factors:

Slope:

Int.:

Cal Date:

2 - 20 lpm

mm $Hg = hPa \times 0.7502$

atm = hPa/1013

in. $Hg = hPa \times 0.0295$

Conversions:

 $^{\circ}$ K = $^{\circ}$ C + 273

 $Q_a = m[dPxT_a/P_a]^{1/2} + b$

1/4/11

1.00

0.00

w/ T in Kelvin, P in atm.

Leak Check:

External 23 mmhg/min.

Pass

Limit <25 mmhg

Internal 76 mmhg/min.

Pass

<140 mmhg

			Site		Nominal Flow Rates		
Audit	Audit Flow Rate		Flow Rate	Diff.	Lower Limit	Upper Limit	
Point	Indicated	(VLPM)	(VLPM)	(%)	(LPM)	(LPM)	
Total Flow Rate, Run 1	17.16	17.16	16.70	-2.7	15.0	18.4	
Total Flow Rate, Run 2	<u>17.16</u>	<u>17.16</u>	<u>16.70</u>	<u>-2.7</u>	15.0	18.4	
Avg Total Flow Rate	17.16	17.16	16.70	-2.7	15.0	18.4	

Comments: None.

TABLE A-1

GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT QUALITY ASSURANCE PERFORMANCE AUDIT CRITERIA

Measureme	<u>nt Variable</u>	Evaluation Criteria				
Wind Speed		At ws \leq 5 m/s, input \pm 0.25 m/s; At ws $>$ 5 m/s, input \pm 5% Starting threshold: 0.5 m/s; R. M. Young 05305 Wind Monitor AQ Starting threshold: 1.0 m/s; R. M. Young 05103 Wind Monitor and NRG Max 40H				
Wind Direct	ion	input ± 5° Starting threshold: 0.5 m/s; R. M. Young 05305 Wind Monitor AQ Starting threshold: 1.0 m/s; R. M. Young 05103 Wind Monitor				
Temperatur	e	input \pm 0.5° C Gravimetry Lab \pm 1.0 deg. C input \pm 2.0° C for PM-10, PM-2.5 samplers				
Relative Hu	midity	Ambient: input \pm 5% RH, \pm 1.5°C as dew poin Gravimetry Lab: input \pm 5%				
Precipitation	ı	input $\pm 10\%$				
Barometric	Pressure	Ambient: input \pm 10 hPa TEOM: \pm 10 mm mercury				
PM-10: Hi-Y PM-2.5	Vol SSI, Partisol, BGI,	input \pm 10%; Design Flow \pm 10% input \pm 4%; Design Flow \pm 5%				
TEOM:	Total Flow Main Flow Bypass Flow	input \pm 10%; Design Flow \pm 10% input \pm 10%; Design Flow \pm 10% input \pm 10%; Design Flow \pm 10%				
TEOM:	Leak Check	Main Flow: < 0.15 LPM Bypass Flow: < 0.60 LPM				

Appendix B

GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT QUALITY ASSURANCE CERTIFICATIONS OF AUDIT DEVICES

AUDIT DEVICE

	Serial #	Cal Date:	Slope:	Intercept:
BGI Delta CAL:	123	1/24/11	1.0	0.0
BGI Delta CAL:	525	1/4/11	1.0	0.0
Testo 735-1	01467895/712	12/16/10	1.0006	0.0209
Barigo Altimeter/Barometer:	P9	12/17/10	1.0	0.0
RM Young wind speed motor:	CUO1, HSO1	12/3/10	N/A	N/A
Psychro-Dyne Psychrometer:	RH 04	N/A	1 0	1 0
Texas Electronics FC-525 Precipitation:	52202	N/A		
Chinook Eng. Streamline FTS	108	9/8/10	0.41	0.6

	G	reat Ba	asin Unified Ai	ir Pollution Co	ntrol District			
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AT 1 1 142 MINES TOUR 120	1	,	FLO	W AUDIT		4**	e = = 5	
							·i	
Date:	8/1/11			Site Name:	Le Vin	100	 	
Start:		PST		Operator:	Dur	Vaux		18 35 35 31 31 3
Finish:	13:40	PST	1	Project:	SB270//			
to character to the transfer of	505			Site Elevation:	the same of the sa	ft		
Make:	2000 (2025)			Amb. Press.: Amb. Temp.:	I Section to the second	in. Hg deg. C		
Prop. Or Ser. No.:				Allio. Temp	26.0	ueg. c	+	
	PM10/ PM2.5				# 1257 - 2158411-0154E			
Last Cal. Date:	7/27/11						1	
	1/21/11							
Later to the second sec	Audit Device			Temperature/	Pressure Ver	The second name of the second na		
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	DELTA CA			Amb Temp			26-8	
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Cal Date:	1/4/11							
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External	2.3			P/35>	1	<5 psi / <25	mm 1	11.67 077410
Internal	16			PASS		42.5 (2		- 1944 X
at the second							i	¥ Y
			Site		Nominal FI	ow Rates		
Audit	Audit Flow F		Flow Rate	THE REPORT OF STREET,	Lower Limit	WHEN THE PROPERTY AND ADDRESS.	-	
Point	Indicated (VLPM)	(VLPM)	(%)	(LPM)	(LPM)		are e e
Total Fow Rate	17.16		16.20		15.0	18.4		× 1000 00
AVE Total Flow Rate	12.15		16.70		15.0	18.4		
AVE TOTAL TOWN Rate	11/6		16.70					
Comments:								**************************************
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GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT

MEMORANDUM

DATE:

May 6, 2011

TO:

Chris Lanane, Guy Davis

FROM:

Mike Horn

SUBJECT:

Quality Assurance Audit Report

Attached is the draft version of the document, "Great Basin Unified Air Pollution Control District Quality Assurance Audit Report, Lee Vining, May 6, 2011," for your review. Please refer any comments you may have on the document to me by July 6, 2011. If no comments are received by that date, the report will be considered final.

Thank you for your cooperation in this matter.

Great Basin Unified Air Pollution Control District Quality Assurance Audit Report

SITE: LEE VINING

Report Date: May 6, 2011 Prepared by: Mike S. Horn

1.0 Introduction

As part of the Great Basin Unified Air Pollution Control District's (District) quality assurance (QA) program, periodic audits are conducted on the monitoring stations throughout the District. These checks, which are conducted by personnel other than those associated with the day-to-day operation and maintenance of the stations, provide additional assurance that the data collected are of high quality and meet the project objectives. The achievement of these objectives can be determined, in part, by establishing criteria within which monitoring equipment is to be operated and then testing that equipment regularly to verify its operation within those criteria.

In keeping with the District's QA program goals, the Partisol, PM-10 Monitoring Station at Lee Vining was audited on May 3, 2011. The audit was conducted by Mike Horn and was witnessed by Guy Davis, who is the site operator.

2.0 Parameters Audited:

Partisol PM-10

3.0 Results and Actions

The results of the audit are summarized below. Any problems found are addressed under the heading, "Action," and are given below. Sensor responses not specifically addressed below responded within the audit criteria limits. The audit data are presented in detail in Appendix A. The certifications of the audit devices are presented in Appendix B. Audit criteria based on Title 40 code of Federal Regulations Part 58, Appendix A (October 2006), the USEPA Quality Assurance Handbook for Air Pollution Measurement Systems Volumes II, 1997, and IV, 2007, and/ or on the manufactures recommendations, are presented in table A-1.

4.0 Recommendations and Comments

There are no recommendations or comments at this time.

APPENDIX A

Great Basin Unified Air Pollution Control District Partisol - Plus PM - 10 FLOW AUDIT

5/6/11 Site Name: Lee Vining Date of Report: Operator: Guy Davis Date: 5/3/11 Project: SB270 Start: 14:10hrs. PST

14:25hrs. PST Site Elevation: 6781 ft Finish: Amb. Press.: 798.5 mm Hg Audited By: Mike Horn 18.5 deg. C **Guy Davis** Amb. Temp.: Witness:

Audit Temp: Testo 735 Serial # 01467895/712 Make: R&P

0.0209 Audit Temp. Slope: 1.0006 Intercept: Model: 2025 Sequential

Prop. Or Ser. No.: 755/2025A210299903 Certification Date: 12/16/10

Temperature / Pressure Verification Type: PM-10

Last Cal. Date: 1/28/11 Audit Calculated Diff. <u>Sampler</u> Raw 18.5 18.5 18.5 0.0 **Audit Device** Amb Temp 20.1 20.1 0.1 Filter Temp 20.2 Make: BGI Incorporated

Amb Pressure

798.5

596.0

599.0

-3.0

0525 S/N: Conversions: Range: 2 - 20 lpm

mm $Hg = hPa \times 0.7502$ Calibration factors:

atm = hPa/1013Slope: 1.00 in. $Hg = hPa \times 0.0295$ 0.00 Int.:

 $^{\circ}$ K = $^{\circ}$ C + 273 1/4/11 Cal Date:

> $Q_a = m[dPxT_a/P_a]^{1/2} + b$ w/ T in Kelvin, P in atm.

Leak Check: Limit

<25 mmhg External 23 mmhg/min. Pass <140 mmhg Internal 60 mmhg/min. Pass

		Site			Nominal Flow Rates		
Audit	Audit Flow Rate		Flow Rate	Diff.	Lower Limit	Upper Limit	
Point	Indicated	(VLPM)	(VLPM)	(%)	(LPM)	(LPM)	
Total Flow Rate, Run 1	17.14	17.14	16.70	-2.6	15.0	18.4	
Total Flow Rate, Run 2	<u>17.14</u>	17.14	<u>16.70</u>	<u>-2.6</u>	15.0	18.4	
Avg Total Flow Rate	17.14	17.14	16.70	-2.6	15.0	18.4	

Comments: None.

Model: DELTA CAL

TABLE A-1

GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT QUALITY ASSURANCE PERFORMANCE AUDIT CRITERIA

Measureme	nt Variable	Evaluation Criteria				
Wind Speed		At ws ≤ 5 m/s, input ± 0.25 m/s; At ws > 5 m/s, input ± 5% Starting threshold: 0.5 m/s; R. M. Young 05305 Wind Monitor AQ Starting threshold: 1.0 m/s; R. M. Young 05103 Wind Monitor and NRG Max 40H				
Wind Direct	ion	input ± 5° Starting threshold: 0.5 m/s; R. M. Young 05305 Wind Monitor AQ Starting threshold: 1.0 m/s; R. M. Young 05103 Wind Monitor				
Temperatur	re	input \pm 0.5° C input \pm 2.0° C for PM-10, PM-2.5 samplers				
Relative Hu	midity	Ambient: input \pm 5% RH, \pm 1.5°C as dew point Gravimetry Lab: input \pm 5%				
Precipitation	ı	input ± 10%				
Barometric	Pressure	Ambient: input \pm 10 hPa TEOM: \pm 10 mm mercury				
PM-10: Hi-Y PM-2.5	Vol SSI, Partisol, BGI,	input \pm 10%; Design Flow \pm 10% input \pm 4%; Design Flow \pm 5%				
TEOM:	Total Flow Main Flow Bypass Flow	input \pm 10%; Design Flow \pm 10% input \pm 10%; Design Flow \pm 10% input \pm 10%; Design Flow \pm 10%				
TEOM:	Leak Check	Main Flow: < 0.15 LPM Bypass Flow: < 0.60 LPM				

Appendix B

GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT QUALITY ASSURANCE CERTIFICATIONS OF AUDIT DEVICES

AUDIT DEVICE

AUDIT DEVICE	Serial #	Cal Date:	Slope:	Intercept:
BGI Delta CAL:	123	1/24/11	1.0	0.0
BGI Delta CAL:	525	1/4/11	1.0	0.0
Testo 735-1	01467895/712	12/16/10	1.0006	0.0209
Barigo Altimeter/Barometer:	P9	12/17/10	1.0	0.0
RM Young wind speed motor:	CUO1, HSO1	12/3/10	N/A	N/A
Cole-Parmer 3312-40 Psychrometer:	RH 03	12/10/04	Wet 1.0037 Dry 1.0059	Wet -0.0598 Dry -0.1518
Texas Electronics FC-525 Precipitation:	52202	N/A		
Chinook Eng. Streamline FTS	108	9/8/10	0.41	0.6

THE RESIDENCE OF THE PARTY OF T	G	reat Ba	asin Unified Ai	the season of th	ntrol District	74		
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		·	FLO	W AUDIT		7.7		
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Date	5/3/11			Site Name:	1 11	-1	ļ	
Start		PST				2		-5.5
Finish		PST		Project	SB270	layer		<u> </u>
	114 20-			Site Elevation:	002.00	ft	-	
Make	R&P			Amb. Press.:	and the same of th	in. Hg		-11
	2000 (2025			Amb. Temp.:		deg. C		
Prop. Or Ser. No.:					10.0			
	PM10/ PM2.5							***
Last Cal. Date:			1-1-111					315.0
					NO. 10-10-11 AC-10-1	** [**********************************		
	Audit Device			Temperature/	Pressure Ver	ification		
Make:		RPOR	ATED		Sampler	Standard	(Raw)	
Model:				Amb Temp	18.5		18,5	
S/N:	1	5		Filter Temp	201		20.1	
Range:			1	Amb Pressure			798.5	
Calibration factors:		Marine .			.7502X		1	
Slope:	1.0	-11111			2000			
Int.:	0.0							
Cal Date:	· Ilulii		- (1 - (1 - 2 - 1) (1 - 1 - 1) (1 - 1 - 1) (1 - 1 - 1)					====
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		41.4				L	1.3.	
Leak Check:	Initial Pres.		Final Pres.	P _i -P _f		<u>Limit</u>		
External	23		PA 55			<5 psi / <25	mm	H (m) (m)
Internal	60	8 90 (1 988	0055		the second second		· · · · · · · · · · · · · · · · · · ·	11.00
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##: H. (### (## (## (## (## (## (## (## (## (000 DECEMBER 1				
			Site		Nominal FI			
Audit	Audit Flow F	Rate	Flow Rate	Diff.	Lower Limit	Upper Limit		
Point	Indicated (\	VLPM)	(VLPM)	(%)	(LPM)	(LPM)		
Total Fow Rate	77.74		16.70		15.0	18.4		
***	17.14		16.70			***		
E Total Flow Rate	17.14		16.70		15.0	18.4		
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GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT

MEMORANDUM

DATE: October 4, 2011

TO: Chris Lanane, Guy Davis

FROM: Mike Horn///

SUBJECT: Quality Assurance Audit Report

Attached is the draft version of the document, "Great Basin Unified Air Pollution Control District Quality Assurance Audit Report, Lee Vining, February 4, 2011," for your review. Please refer any comments you may have on the document to me by April 4, 2011. If no comments are received by that date, the report will be considered final.

Thank you for your cooperation in this matter.

Great Basin Unified Air Pollution Control District Quality Assurance Audit Report

SITE: LEE VINING

Report Date: February 4, 2011 Prepared by: Mike S. Horn

1.0 Introduction

As part of the Great Basin Unified Air Pollution Control District's (District) quality assurance (QA) program, periodic audits are conducted on the monitoring stations throughout the District. These checks, which are conducted by personnel other than those associated with the day-to-day operation and maintenance of the stations, provide additional assurance that the data collected are of high quality and meet the project objectives. The achievement of these objectives can be determined, in part, by establishing criteria within which monitoring equipment is to be operated and then testing that equipment regularly to verify its operation within those criteria.

In keeping with the District's QA program goals, the Partisol, PM-10 Monitoring Station at Lee Vining was audited on February 2, 2011. The audit was conducted by Mike Horn and was witnessed by Guy Davis, who is the site operator.

2.0 Parameters Audited:

Partisol PM-10

3.0 Results and Actions

The results of the audit are summarized below. Any problems found are addressed under the heading, "Action," and are given below. Sensor responses not specifically addressed below responded within the audit criteria limits. The audit data are presented in detail in Appendix A. The certifications of the audit devices are presented in Appendix B. Audit criteria based on Title 40 code of Federal Regulations Part 58, Appendix A (October 2006), the USEPA Quality Assurance Handbook for Air Pollution Measurement Systems Volumes II, 1997, and IV, 2007, and/ or on the manufactures recommendations, are presented in table A-1.

4.0 Recommendations and Comments

There are no recommendations or comments at this time.

APPENDIX A

Great Basin Unified Air Pollution Control District Partisol - Plus PM - 10 FLOW AUDIT

Date of Report:

2/4/11

Date: 2/1/11

Start:

14:00hrs. PST

Finish:

14:20hrs. PST

Audited By:

Mike Horn

Witness:

Guy Davis

Make: R&P

Model: 2025 Sequential

Prop. Or Ser. No.: 755/2025A210299903

Type: PM-10

Last Cal. Date: 1/28/11

Site Name: Lee Vining

Operator: Guy Davis

Project: SB270

Audit Temp: Testo 735 Serial # 01467895/712 Audit Temp. Slope:

Site Elevation:

Amb. Press.:

Amb. Temp.:

1.0006

12/16/10

1.4

600.0

6781 ft

802.4 mm Hg

-1.7 deg. C

Intercept: 0.0209

1.2

602.0

Diff.

0.3

0.2

-2.0

Certification Date:

Temperature / Pressure Verification

_	Audit				
Sampler	Raw	Calculated			
-1.4	-1.7	-1.7			

1.2

802.4

Make: BGI Incorporated Model: DELTA CAL

Audit Device

S/N:

0525

Range:

2 - 20 lpm

Calibration factors:

Slope: Int.: 1.00 0.00

Cal Date:

1/4/11

Conversions:

mm $Hg = hPa \times 0.7502$

atm = hPa/1013

Amb Temp

Filter Temp

Amb Pressure

in. $Hg = hPa \times 0.0295$

 $^{\circ}$ K = $^{\circ}$ C + 273

 $Q_a = m[dPxT_a/P_a]^{1/2} + b$

w/ T in Kelvin, P in atm.

Leak Check:

External 21 mmhg/min.

Pass

Limit <25 mmhg

Internal 72 mmhg/min.

Pass

<140 mmhg

			Site		Nominal Flow Rates		
Audit	Audit Flow	Rate	Flow Rate	Diff.	Lower Limit	Upper Limit	
Point	Indicated	(VLPM)	(VLPM)	(%)	(LPM)	(LPM)	
Total Flow Rate, Run 1	16.94	16.94	16.70	-1.4	15.0	18.4	
Total Flow Rate, Run 2	<u>16.94</u>	16.94	<u>16.70</u>	<u>-1.4</u>	15.0	18.4	
Avg Total Flow Rate	16.94	16.94	16.70	-1.4	15.0	18.4	

Comments: None.

Appendix B

GREAT BASIN UNIFIED AIR POLLUTION CONTROL DISTRICT QUALITY ASSURANCE CERTIFICATIONS OF AUDIT DEVICES

AUDIT DEVICE

	Serial #	<u>Cal Date:</u>	Slope:	Intercept:
BGI Delta CAL:	123	1/24/11	1.0	0.0
BGI Delta CAL:	525	1/4/11	1.0	0.0
Testo 735-1	01467895/712	12/16/10	1.0006	0.0209
Barigo Altimeter/Barometer:	P9	12/17/10	1.0	0.0
RM Young wind speed motor:	CUO1, HSO1	12/3/10	N/A	N/A
Cole-Parmer 3312-40 Psychrometer:	RH 03	12/10/04	Wet 1.0037 Dry 1.0059	Wet -0.0598 Dry -0.1518
Texas Electronics FC-525 Precipitation:	52202	N/A		

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Finish		PST		Project:		range.	N/8396641	7 E 2
	1.1.20			Site Elevation:		ft		
Make:		1	->3040 (0. 2006	Amb. Press.:	802.4	in. Hg		10 S 1000
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Prop. Or Ser. No.:								
	PM10 / PM2.5	5	*					
Last Cal. Date:		ļ		ļ		11/11/2007		11.540-
	Audit Davies		·	Tomporatural	Pressure Ver	ification		
Make	Audit Device			remperature	Sampler	Standard	(Raw)	
Make: Model:	W. C. S.		ATED	Amb Temp	- 1 11	<u>Junuaru</u>	7	
ATTENDED TO THE PERSON OF THE	DELTA CA 0123 52			Filter Temp	17		13	
Range:				Amb Pressure	600		802.4	
Calibration factors:	2 - 20	.pm			.7502X		U	
Slope:	1.0				13021			
Int.:	0.0,						1	
Cal Date:	124/11							
** *** *** *** *** *** *** *** *** ***	17-17-1							
	$Q_a=m[dPxT_a]$	/P _a] ^{1/2} +	b	w/ Tin K	elvin, P in a	tm 10	13	
Leak Check:	Initial Pres.		Final Pres.	P _i -P _f		<u>Limit</u>		
External	21			PASS		<5 psi / <25	mm	
Internal	72			PASS			2	12 1272
es il some elle i dil				en vesa mi				3.00
1 (Site		Nominal FI	ow Rates		
Audit	Audit Flow	Rate	Flow Rate	Diff.	Lower Limit			
Point		(VLPM)	(VLPM)	(%)	(LPM)	(LPM)	UN UN 14	
/ Total Fow Rate	1/ 911		1670		15.0	18.4		9560 K 8
2.	16.94		16.70					1010 00
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